

CHICAGO POWER ELECTRIC® SYSTEMS

50 AMP LOAD - BATTERY AND CHARGING SYSTEM TESTER

Model 93784

OPERATING INSTRUCTIONS



Due to continuing improvements, actual product may differ slightly from the product described herein.



3491 Mission Oaks Blvd., Camarillo, CA 93011

Visit our Web site at <http://www.harborfreight.com>

**TO PREVENT SERIOUS INJURY, READ AND UNDERSTAND
ALL WARNINGS AND INSTRUCTIONS BEFORE USE.**

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For technical questions and replacement parts, please call 1-800-444-3353.

SPECIFICATIONS

Capability	6 and 12 VDC battery tester with charging system output
Load Test Capacity	50 Amps; 300-500 cold cranking Amps
Display Meter	Analog, 0-16 VDC (maximum)
Test Cycle	10 seconds per test with 1 minute cool down; up to 3 tests in 5 minutes
Battery Cables/Clamps	19 ¹ / ₂ "; Copper-plated clamps
Overall Dimensions	11 ¹ / ₂ "L x 7"W x 3 ¹ / ₄ "D
Features	Carrying handle and four rubber feet

Save This Manual

You will need the manual for the safety warnings and precautions, operating and maintenance procedures. Keep your invoice with this manual in a safe and dry place for future reference.

SAFETY PRECAUTIONS



WARNING!

READ AND UNDERSTAND ALL INSTRUCTIONS. Failure to follow all instructions listed below may result in electric shock, fire, and/or serious injury.

SAVE THESE INSTRUCTIONS

1. Keep your work area clean and well lit. Cluttered benches and dark areas invite accidents.
2. Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases, or dust. Power tools create sparks which may ignite the dust or fumes.
3. Keep bystanders, children, and visitors away while operating a power tool. Distractions can cause you to lose control. Protect others in the work area from debris such as chips and sparks. Provide barriers or shields as needed.
4. Do not force the tool. Use the correct tool for your application. The correct tool will do the job better and safer at the rate for which it is designed.

5. Do not use the power tool if the Power Switch does not turn it on or off. Any tool that cannot be controlled with the Power Switch is dangerous and must be replaced.
6. Store idle tools out of reach of children and other untrained persons. Tools are dangerous in the hands of untrained users.
7. Maintain tools with care. Keep clean. Do not use a damaged tool. Tag damaged tools “Do not use” until repaired.
8. Tool service must be performed only by qualified repair personnel. Service or maintenance performed by unqualified personnel could result in a risk of injury.
9. Maintain labels and nameplates on this tool. These carry important information. If unreadable or missing, contact Harbor Freight Tools for a replacement.

10.



Always wear ANSI approved safety impact eye goggles and heavy work gloves when using this tool. Using personal safety devices reduce the risk for injury. Safety impact eye goggles and heavy work gloves are available from Harbor Freight Tools.




Battery acid may cause severe injury to eyes; always wear ANSI approved safety goggles. Avoid touching eyes while working with or near a battery. **In case of accidental contact, rinse eyes with clean water for at least 5 minutes and see a doctor immediately.**

11. Maintain a safe working environment. Keep the work area well lit. Make sure there is adequate surrounding workspace. Always keep the work area free of obstructions, grease, oil, trash, and other debris. Do not use this tool in areas near flammable chemicals, dusts, and vapors. Do not use this product in a damp or wet location.
12. People with pacemakers should consult their physician(s) before using this product. Electromagnetic fields in close proximity to a heart pacemaker could cause interference to or failure of the pacemaker.

Caution is necessary when near the coil, spark plug cables, or distributor of a running engine. The engine should always be off if adjustments are to be made to the distributor.

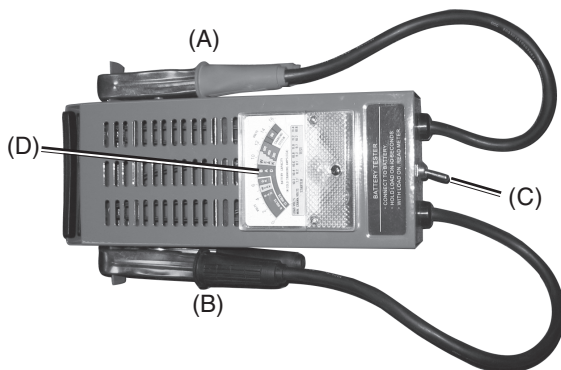
13. When connecting the Battery Cables to the battery, avoid creating sparks (always connect and disconnect clamps exactly as described in rule number 14, below, and on page 4), especially when the battery is being charged. Explosive gases are created during charging. Sparking could also damage the vehicle electrical system.
14. Be certain of the test battery polarity before connecting the test Cable Clamps. The red Cable Clamp (A) goes to the positive terminal of the battery. The black Cable Clamp (B) goes to the negative terminal of the battery.
15. When placing the Battery Tester in the vehicle (on the frame, engine, or fender), take special care that the metal housing of the Battery Tester does not come in contact with either terminal of the battery or other electrical connections.
16. Do not drop the Battery Tester as it may affect proper operation.
17. Do not smoke or have open flames near the battery.
18. Reversing Battery Tester Cable Clamps on the battery will damage the tester.
19. Do not connect the Battery Tester to the battery while the battery is being charged. Turn the engine off before connecting.

20.  Do not touch the cooling vents on the Battery Tester immediately after testing the battery. They become very hot.

UNPACKING

When unpacking, check to make sure that the product is intact and undamaged. If any parts are missing or broken, please call Harbor Freight Tools at the number at the bottom of the page as soon as possible.

OPERATING INSTRUCTIONS



Testing the Battery

Undercharged lead-acid batteries will freeze during cold weather.

WARNING! NEVER TEST OR CHARGE A FROZEN BATTERY.

1. To help ensure a good connection, clean battery terminals with a solution of baking soda and water, and wipe the battery terminals with a cloth to remove any dirt and grease.
2. Connect the red (positive) Cable Clamp (A) to the positive terminal (+) on the 6 or 12 V lead-acid battery. (See photo above.)
3. Connect the black (negative) Cable Clamp (B) to the negative terminal (-) on the battery. Turn clamps slightly to ensure a good connection.
4. With the clamps connected, the tester's gauge will show the battery's current charge. If it is less than 12 V on a 12 V battery (or 6 V on a 6 V battery), disconnect the battery and recharge before testing. If recharging will not bring the reading above the appropriate voltage (noted above), the battery is defective. If it shows no reading, verify that the tester is connected properly. If the tester is connected properly, the battery is defective.
5. Press (and hold) the Toggle Switch (C) for at least 5 seconds to simulate an actual load on the battery.
6. View the Meter Display (D) and read the battery condition. Refer to the "Battery Condition Analysis" section on the next page.
7. Release the Toggle Switch (C) and remove the Cable Clamps from the battery.

Testing the Charging System

Note: The engine should be at normal operating temperature during this test.

1. Connect the Cable Clamps (A, B) to the battery as previously described.
2. Outside, or in a well ventilated area, start the vehicle engine and run at fast idle speed. Never start and run the vehicle's engine in a closed garage.

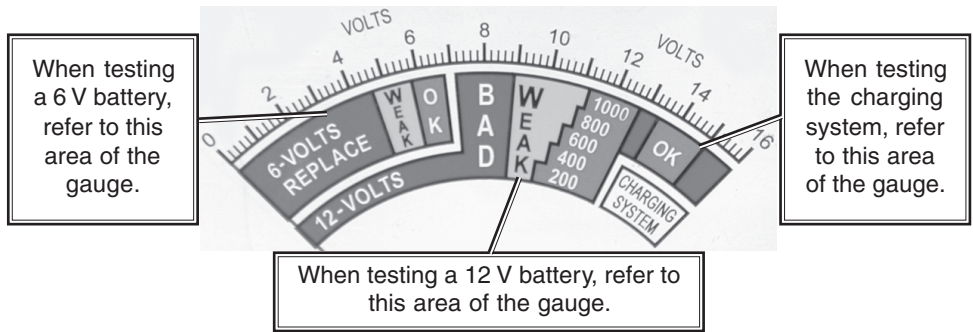


WARNING: Avoid Carbon Monoxide poisoning. This gas comes from the vehicle exhaust and is colorless and odorless. It can cause serious injury or death if inhaled. Never run the vehicle's engine inside a garage or any other enclosed space.

3. View the Meter Display (D) and read the charging system condition (far right on the gauge). Refer to the "Battery Condition Analysis" section below.

Caution: DO NOT press the Toggle Switch (C) during this test.

Battery Condition Analysis



LOAD TEST / 5 Sec. (Display Reading)	BATTERY CONDITION
OK (green area)	Battery capacity is good. May or may not be fully charged. Check the charge state by testing the Specific Gravity (SG) with a Hydrometer. If SG is less than full charge, check for possible charging system trouble. Recharge to full level.
WEAK (yellow area)	If the Display Meter needle is steady, the battery capacity is not good. Battery may be defective or partly discharged. Check SG. If over 1.225, the battery is defective. If below 1.225, recharge battery and re-test. If there is a difference in SG between cells over 2 points (0.025), a particular cell may be damaged. If charging does not bring SG to full charge level, then battery is either sulfated, or has lost its active material.
BAD (red area)	If the Display Meter needle is falling, the battery is defective or has a bad cell. For a quick check, release the load Toggle Switch and note Display Meter reaction. If voltage recovers to its full potential after only a few seconds, the battery is probably defective. If the voltage recovers slowly, the battery may only be run down. Check SG, recharge, and re-test.
CHARGING SYSTEM (white area)	If the Display Meter needle reads OK, charging system is functional. If it falls on the low red or high red areas, charging system may be malfunctioning.

Testing the Starter

Note: The engine should be at normal operating temperature and the battery should be fully charged before doing this test.

1. Disable the ignition so the engine will not start. (Refer to your vehicle's manual.)
2. Connect the Cable Clamps (A, B) to the battery as previously described.
3. Have an assistant crank the engine. Note the voltage reading during cranking.
4. View the Meter Display (D) and read the voltage. A reading of 9 volts or less indicates excessive current draw for a 12 V system. This may be due to a poor connection, a failing starter, or a battery of insufficient size for the motor.

Caution: DO NOT press the Toggle Switch (C) during this test.

INSPECTION, MAINTENANCE, AND CLEANING

1. Store in a clean and dry location.
2. Clean the outside of the unit with a damp cloth. Never use solvents to clean any part of this tool. Use compressed air to blow out debris from the load vents.
3. After each use, clean the Cable Clamps of any possible battery electrolyte. Apply a thin coat of silicon grease to prevent corrosion.
4. If needed, turn the black screw at the bottom center of the gauge to adjust the needle so that it points exactly at the zero while the unit is disconnected.

REPLACEABLE PARTS

The Battery Tester has no replaceable parts.